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# Back Belts

Market Analysis and Report

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## John Alden Associates

John Alden Associates is the leading marketing consulting firm in the field of personal safety and ergonomic equipment, particularly in the area of new products and/or new markets. The firm was started in 1982 by A. J. McNamara, who was previously Vice-President, Sales and Marketing, for a major safety products manufacturer.

The firm's clients include product inventors and developers, product manufacturers, and distributors located in the USA, Canada, Europe, Australia, New Zealand, Mexico, and South America.

Developed from its activities in creating trial orders for new products, the firm also markets computer software for advanced telemarketing, including fully automated fax and E-mail capabilities. (The End User Survey in this Report used the automated fax communications and database programs.)

This Report was written by A J McNamara as an independent project of the firm. Laura Watkins, Associate, conducted the actual survey of end users and assisted in the preparation of this materials. Contents of this report are protected by copyright. Product trademarks and tradenames used herein are the property of their respective owners as referenced. The report is intended to aid in market analysis and planning in the field of back belts; it is not intended to represent or advise anyone regarding financial investments in the subject area. The information presented herein is believed to be accurate and timely. Any corrections should be addressed to the author who will advise such changes to all purchasers of the report, if the corrections are significant.

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## Introduction

The sudden and dramatic growth of the back belt business surprised many people in the safety products distribution business (and many observers from neighboring segments of this same industry). The easiest way to see this spurt of growth was at the main trade show. Starting with the National Safety Congress & Exposition of 1989, more and more new exhibitors appeared, each a specialist in this area of "back belts" or "ergonomic products".

By the 1993 NSC&E in Chicago, the number of back belt and/or "ergo products" exhibitors had expanded to more than 40 different booths, the largest single product category at the Show.

Advertising in the trade magazines is another sign that back belts are a major segment of this business. Four-color, full page ads appeared from companies that were not known before in the safety business. Independent sales reps (Manufacturers' reps) found a new source of commission income. Distributors saw a new product category emerge.

How could all of this happen so fast ? After all, the industrial safety products business is considered rather conservative. Are these back belts just a "fad" that will disappear as fast as it happened ? Or will the future hold continued sales and profits from back belts ? Is it true that back belts represent the beginning of a whole new product category: Personal Ergonomics Equipment ? Or, Will the planned OSHA Ergonomics Standard ban the use of back belts? The answers to these questions are important to the manufacturers, the distributors, and the sales reps of back belts.

The following report is meant to give a fair description of this product/market segment and to project its most likely future through the 1990's.

**Before Anyone Noticed.** Before 1984, the common notions about back belts were contained in two distinctly different areas: Weight Lifting (sports) and/or Medical Treatment ("bad backs"). From each of these very different roots have come most of today's back belt producers and some of the market's thinking about back belts.

**Weight lifters.** How many times have you watched TV coverage of the Olympic Games and seen a quick shot of the weight lifter(s)? Obvious in the TV picture is the weight lifter's belt. Just before attempting the lift, he cinches up the belt - usually leather with a big buckle in the front. The impression one gets from these pictures is that the weight lifter is "stronger" from the use of the belt (or why else would he use it?) .

**Bad backs.** The other root to back belts is also common. Many people have hurt their lower backs (or they have family or friends who were the injured party). A good portion of these victims of a "bad back" were told to wear a "back brace", a corset-like item (worn under everyday clothing) to give more support to their nagging, aching backs. With a series of draw strings and metal stays (very much like a corset), the person could tighten up the brace, pulling in the abdominal muscles and feeling less painful pressure in the lower back. A common side benefit of the corset-style protector was the difficulty in making forward bends at the waist: The corset stays poked into the ribs and the compressed abdominal area had little or no way to move to allow the bend to happen easily.

Each of these product-root areas - athletics and medical - had product manufacturers, sales reps, and distributors who covered these diverse uses of what we knew as "back belts". The weight lifters' belts were made from leather and, more recently, from colorful synthetic fibers like DuPont's Cordura nylon. Distribution was logically through retail athletic outlets and fitness clubs and workout gyms. Sales reps were the people who specialized in this area. Users were taught to tighten the belt just prior to lifting, then to loosen it or to take it off when not lifting. Certainly, a weight lifter's belt had all the outward signs of "macho" and physical power.

There is quite a contrast to the other root on the medical side. Product manufacturers were involved in the production of "ortho" (orthotic) products used to help ease the pain, to speed the healing, and to avoid too much strain on various joints in the body (knee, wrist, elbow, etc.). Products were made from a series of lightweight materials, sometimes with the extra benefit of "holding in body heat" to help the injured area recover. Distribution and related sales people were "medically oriented" as compared to the "retail athletics" group above. Users were taught to "wear the corset-type belt until their backs felt better". Getting rid of the belt was a sure sign that the spell of back pain was over.

**Comp Costs.** Meanwhile, American companies were experiencing horrible increases in the cost of workers' compensation insurance. In the 1980's, the combination of double-digit leaps in medical costs and the generally under-funded condition of state comp plans, created a sharp rise in premiums. Some small companies faced 100% jumps in annual insurance costs; larger firms faced smaller percentage increases but very large real dollar cost escalation. The outlook for the future was continued large increases, threatening some companies' profitability. These rapidly rising costs caught the attention of management. Their attention was ready for somebody - anybody - who could help cut this awful, non-productive cost. All of the insurance data showed that back injuries represented more than half of all comp costs.

**Help Wanted.** Just as American industry was ready for someone or something to help reduce the comp insurance costs, along came Dr. Thomas Votel, a specialist in occupational medicine practicing in St Paul, MN. Dr. Votel saw the possibility of using a slightly different type of back belt - a strap-on back support device - as a way to reduce the number of back injuries caused by improper lifting. Thus, there would be lower comp claims, resulting in lower insurance costs. With a group of investors, Dr. Votel started Comp Equipment Corp. in 1983.

Originally marketed under the name of "Comp Vest", the company tried to sell the product to the insurance companies. For a number of good reasons, including being just a little bit early, this first effort was a failure. By 1985 the company was out of money and almost out of business.

The turn-around came in several steps. First, Dr. Votel's son, also named Tom, was given a last chance to save what was left of the company. The younger Votel renamed the business Ergodyne Corp. and the product line name of ProFlex was established. Second, he changed the product to a modern, "user friendly" look with suspenders. Next, he thought that the best way to reach this market was through safety products distributors. To find the right distributors he got some help from Jim Bernard, a retired 3M Occupational Health & Safety Products Division manager who knew the top US safety distributors.

In late 1985 and throughout 1986, Votel and Bernard roamed the US market calling on the selected distributors. Some distributors listened to the sales pitch and said "No thanks. No way. No." A few distributors liked the Ergodyne idea and took the visitors to some of their customers who were trying to cut rising back injury costs. Some of these employers tried the ProFlex belts along with the recommended re-emphasis of proper lift training.

As they say, the rest is history. The employers who tried ProFlex belts started to see a decrease in claims for back injuries so they bought more ProFlex belts from the distributors who carried the products. Most of the distributors who tried this idea are now important distributors of ProFlex brand products. As a result, Ergodyne Corp. has grown into a multi-million dollar company that is the industry leader in the field of back belts and other, emerging personal ergonomic products (PEP, for short). Ergodyne Corp.'s sales in F/Y 1987 were almost \$1 million, basically back belts sold through a selective group of safety equipment distributors. Sales have doubled almost every year between 1987 and 1992. For the fiscal year end April 30, 1993, Ergodyne is expected to report sales in the mid-\$30 million range.

**Competition joins in.** The sudden popularity of ProFlex was noticed by other companies that were making either weight-lifters' belts or the orthotic styles. It wasn't long before these other manufacturers were offering back belts to industry. These manufacturers naturally pursued product designs that were a lot like their basic businesses. The weight-lifters' style belt companies such as OK-1 and Valeo came out with narrow, lifter-style products. The orthotic companies such as FLA Orthopedics were in a wider style, something between the old corset style and the ProFlex design. By 1994, most of the weight-lifter style companies added the wider style to their lines and a few of the corset-style companies added the weight-lifter style.

The number of companies making and selling back belts in the USA in 1994 is estimated to be between 40 and 50. For comparative purposes, the group can be divided into three distinct sections.

(Before presenting any estimated market statistics, please note that except for the Ergodyne Corp's sales figures - which are public data - all other information on market size in dollars, units, and average product price are estimates by the author based upon interviews and discussions with contacts in various key segments of this market. Also, to provide as much privacy as possible to the privately held companies, some data will be presented in groupings.)

(Further, comments about these companies are meant to point out differences rather than place blame or fault on the company or its management. A comparison of the differences will start to show the probable future options in the PEP market segments.)



**Group 1: The Leader(s).** Estimated 1994 share of back belt market: 20 %

**Ergodyne Corp.**

ProFlex and WorkSmart brands. The pioneer is still the leader in back belts and in most of the PEP category. Strong field sales force and distribution system, leading brand name, high quality products. It is probably losing market share to lower priced products which have fewer "bells & whistles" and a lot less overhead expense to support.

**Group 2: The Contenders.** As a group, estimated 1994 market share: 40%

**OK-1**

**Chase Ergonomics**

**FLA Orthopedics Inc.**

**OccuMed International**

**Safeguard Technologies**

These five companies are identified - as a group - in second position to Ergodyne in the general industrial or in specialty markets. No single member of the group has the market share, products, or resources to seriously challenge the market leader. Each one has one or two items that might be a little unique or they might only have been the "available" line for a given distributor in an area in the early days and that has grown nicely over time. However, the combined efforts of this "group" have accomplished many of the things that were missed or passed over by the leader.

OK-1 came from the leather weight-lifter belt area and it is probably the leader in that narrow style, although most of the product today is made from synthetic fabrics such as DuPont's Cordura nylon.. OK-1's product line has been expanded into the wider belts and the company operates with an independent sales rep and distributor organization. It has recently started to expand its PEP line of products.

**Chase Ergonomics** (Decade brand products) has a wide product line, uses independent reps and distributors. In many ways Chase appears to be trying to become another Ergodyne, with a very wide range of new and old PEP items.

**FLA Orthopedic** comes from the medical side and seems to concentrate on major end users with a direct selling effort although that might be shifting towards distribution. With some recent changes in ownership and market direction, this company might be having a slight setback in the industrial market.

**Safeguard Technologies** has some unique belt designs using an air-bladder, with warming and cooling compartments, etc. Company has faced dual difficulties of being part of a group (Safety Supply America) that competes with most distributors and being a subsidiary of a conglomerate that has had financial difficulties (Figgie).

**OccuMed** pioneered the use of overseas manufacturing in Taiwan and China and has a strong position with lower-priced range of products, using independent sales reps and distributors.

**Group 3: "The Others:** As a group Estimated market share: 40%

The group has member companies most of whom were - and still are - active in the weight-lifter or medical treatment market segments, plus a few "spin offs" and "break-aways" that came from these companies.

Some of the companies have carved out fairly unique product positions with (styles, colors, etc.) mainly by being there in the early days and establishing a niche or two. Some of this group are experienced and established with retail sales reps and have good past relationships (e.g., sporting goods), thus finding it easier to work in the "alternative channel".

In conclusion, a few members of this group can claim to be strong in certain niche market segments, but in general, none are expected to ever become one of the leading brands or suppliers of back belts.

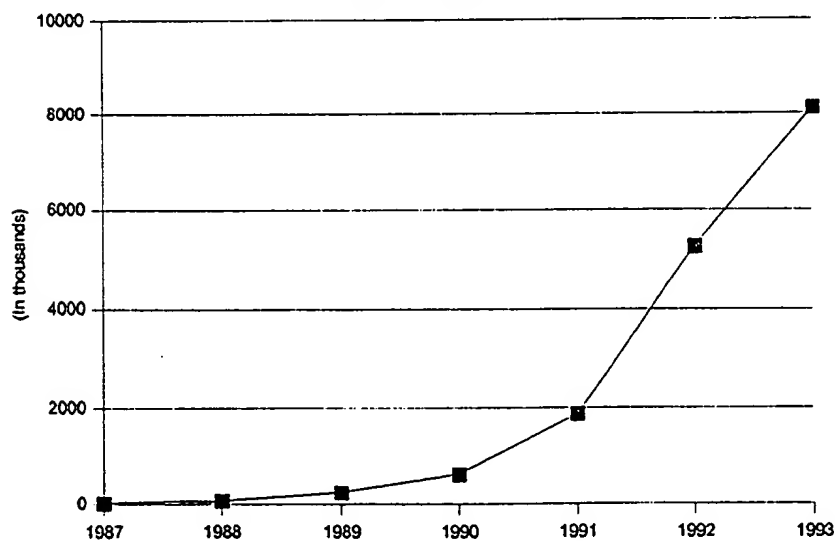
A few of the manufacturers have been issued patents, but with few exceptions these appear to be either limited to a very particular design (angle or feature) and/or attachment for special purposes. This leaves almost all of the current models in an open competition where the product differences between one belt and another are the quality of materials and workmanship. Each producer's sales and marketing system, service, etc. are factors as well, but the overriding considerations are going to be product price and accessibility, which are determined by positioning.

**Unit history.** Market acceptance of back belts is presented in Chart I below. Unit sales began at a modest 25,000 in 1987 as employers started trying the products. As many of these customers decided to expand the use of belts with more employees and as more new customers started trying belts, sales tripled to 75,000 in the next year, and were ten-fold the starting level in 1989 at 250,000.

Probably due to the peaking of the industrial recession and a reluctance to add capacity in 1990, the growth pattern slowed down a bit to 630,000 units. The next year the market picked up its old momentum, almost doubling, in 1991 to 1,880,000 units followed by the big jump to 5,250,000 in 1992. Market penetration seems to have "slowed" to a mere 55% in 1993 to more than 8 million units sold in 1993.

Graph I

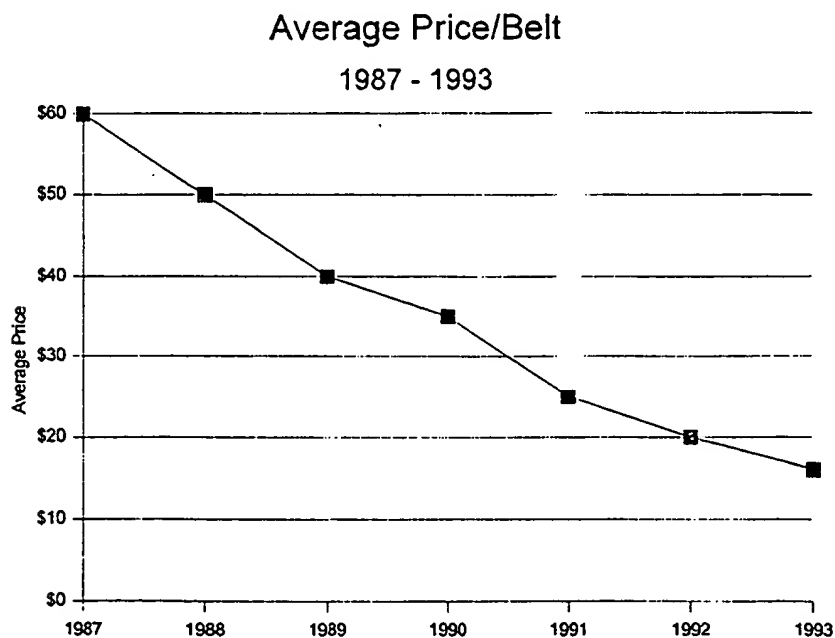
Back Belt Market - Units  
1987 - 1993



**Average price.** As the unit volume grew, the average price per back belt came down as presented in Chart II. ("Average price" is an estimate of the average prices paid by distributors buying in the manufacturer's best volume bracket, allowing for the wide variance between the types and qualities of belts available.) Prices charged by manufacturers to distributors started at an average of \$60.00 per unit in 1987. Decreases of 12% to 20 % per year in 1988 through 1990 dropped the average to \$25.00 by 1991. Increased volume and competition pushed the average down to \$20.00 in 1992 and \$16.00 in 1993 or about 75% less than the starting point six years earlier.

As unit prices fell, the spread between the highest price and lowest price increased. Some end users continued to buy "high-end" expensive belts because there was less cost reduction pressure on that item at that company than elsewhere. At the same time, buyers started to see lower prices for basically the same product (quality and performance) from suppliers eager to get their business. And, the "bottom" of the market was established by importers whose actions will determine the lowest price and acceptable quality.

Graph II



**Market size.** Graph III shows the effect of increasing unit volume and declining unit average prices from 1987 to 1993. From a humble, unnoticed \$1.5 million in its first year, the market zoomed past \$10 million in 1989 on its way to \$47 million in 1991. Sales more than doubled in 1992 to \$105 million. The pace slowed in 1993 to \$130 million or about a 25% increase as the larger base of sales made it almost impossible to continue triple-digit increases. In just seven years, back belts had come from their prior specialty areas (weight lifting and medical treatment), forming the basis of a new product category: Personal Ergonomic Products.

Graph III

**Total Market**  
1987 - 1993

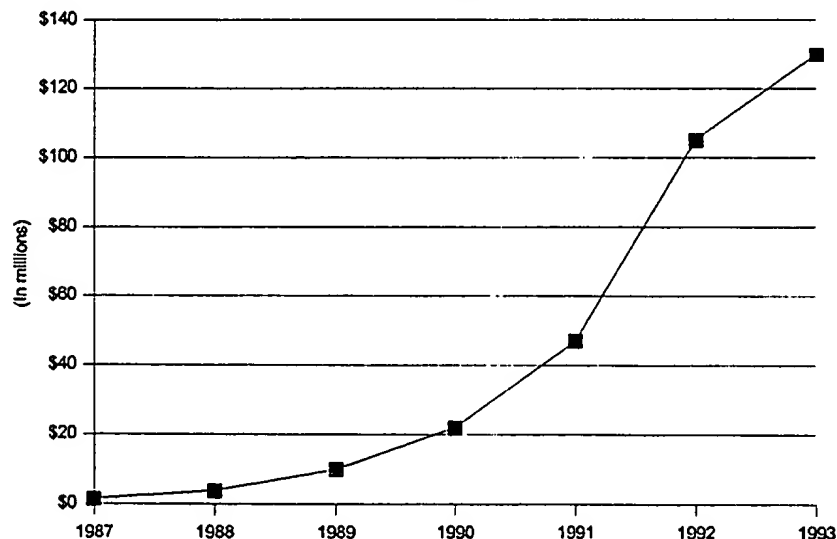


Table I Back Belt Market 1987-1993 Units, Average Price, and Market Size						
Year	Units (000)	% Change	Average Price	% Change	Market (Millions)	% Change
1987	25		\$60.00		\$1.5	
1988	75	200%	\$50.00	-17%	\$3.8	153%
1989	25	233%	\$40.00	-20%	\$10.0	163%
1990	630	152%	\$35.00	-12%	\$22.0	120%
1991	1,880	198%	\$25.00	-29%	\$47.0	114%
1992	5,250	179%	\$20.00	-20%	\$105.0	123%
1993	8,125	55%	\$16.00	-25%	\$130.0	24%

(Data covers the USA market since there is very little activity at this time in other countries for export sales from the USA. Prices are at the point of the manufacturer's sales which is the same as the distributor's cost of product. Distributors are defined broadly to include industrial, medical, alternate channel retail, etc.)

**Do Back Belts Work ?** It might seem to be a bit ridiculous to ask this question after presenting data that over 16 million back belts have been consumed in the past seven years. But this question is certainly one of the keys to predicting the future of the back belt business.

A number of seminars and conferences about reducing low back injuries have included information about using back belt to reduce injuries. Presentations at Low Back Injury Symposium, the National Safety Congress & Exposition, and the American Industrial Hygiene Conference have addressed this topic as well, in a more specific format.

**Scientific approach.** Ergonomists and the other experts involved are all highly trained engineers. Their thinking processes are based upon scientific methods which require that clear evidence exist based upon scientific principles. The solution must be something that can be repeated with predictable results under controlled conditions. Or that the engineering principles involved can be understood using computer models in 2D or 3D. To date, these professionals have not shown that they are convinced that back belts work in any way that they can measure..

In many job situations analyzed, the lifting or other tasks studied are not properly suited for some people. The load(s) to be lifted are just too much for one person. Or the frequency is too great. Or the distance and angle to be lifted are wrong from an a bio-mechanical engineering viewpoint. These types of lifting jobs form the basis of the revised NIOSH Lifting Standard - 1992 which tries to guide the employer's working situation. Then there are the many job situations where the employee suffers lost time due to low back pain - and the lifting requirements of the job are clearly not factors that could explain the problem. How much of the problem might be due to employee behavior (proper lifting, lifting amounts within allowed limits, etc.) ?

The problem of employee claims related to back injuries is apparently much more complex than the scientists can reasonably breakdown, analyze, and recreate . It appears that back injury claims can be reduced by a number of factors working together in a complex fashion. One of these factors is the back belt. Another is training. A third one is the pro-active attention of management with a positive attitude about reducing these injuries as well as reducing the associated costs.

**Reminding you.** Looking back a few years, before the use of back belts in a preventive mode, employers did provide training in proper lifting techniques. After the training was completed and workers went back to work, perhaps too much was dependent on the worker to remember the proper techniques. This often conflicted with the old lifting habits. It appears that one way back belts might work is as a reminder of the training of proper lifting methods.

As far as a positive, pro-active management effort, the back belt can be seen as tangible evidence that the company is trying to do something positive for the employee. And, in those companies where there is a "warm up" exercise program and/or stretching routines, it is possible that these very brief sessions are clear signs of positive, pro-active management. And, on the basis that they are daily, the sessions are another "reminder" of proper training.

That's where we see the back belt fitting into the picture. We know that the belt does nothing to make the worker any stronger. But it just might make the worker remember [the training] better.

So the answer to the question: "Do back belts work?" depends on who is asking and their definition of "work". To the employer we think the definition is clearly the reduction in claims for low back injury and less lost time of trained employees. The worker probably has the definition of less pain, less lost time, etc. Even though there is a cost of training, and possibly these mini-meetings each day to add to the total costs, the benefits of reducing back injuries can be a major benefit for the employer.

On the basis of back belts working as reminders as part of a broader program described above, then back belts are not a "silver bullet" solution. Employers who buy belts, issue them to workers, and order, "everybody has to wear these belts" will find out that back belts - and that style of management - do not work very long, if at all.

To find out if back belts really work [reduce claims, lost time, and pain], one has to leave the laboratory scene and computer model and see what has happened in the real world.

**Reality Check.** The question asked above ("Do Back Belts Work?") and the comments in reply are basically theory, good ideas, etc. While we can all agree that an employer wants to see tangible results (lower costs), what is actually happening out there in the real world?



To find out, a survey of employers was conducted in April, 1994, to determine whether back belts "work" in actual working conditions (not a laboratory or computer model). Of the 1,621 companies contacted by the survey, 301 (18.6% replied). From the replies, the survey determined that

- ◆ Two-thirds (202) of the companies supply back belts as part of a program to reduce back injuries.
- ◆ Of the 202 companies supplying back belts, 86 have secured data on whether claims for back injuries have gone down. Another 84 companies replied that it was too soon to determine results.
- ◆ Of the 86 companies that have secured data, 75% said that they had reduced claims (and 25% said that they did not see a reduction).

(The complete questionnaire and resultant data are in the Survey Section of this report. Other aspects of the Survey are discussed in the Probable Future Section regarding marketing and sales questions.)

In addition to the Survey, a major company has just completed the first phase of a back injury reduction program which included the use of back belts and extensive employee training. The formal report - expected later in 1994 - will present a very positive "Yes" in reply to the basic question about back belts.

### Probable Future

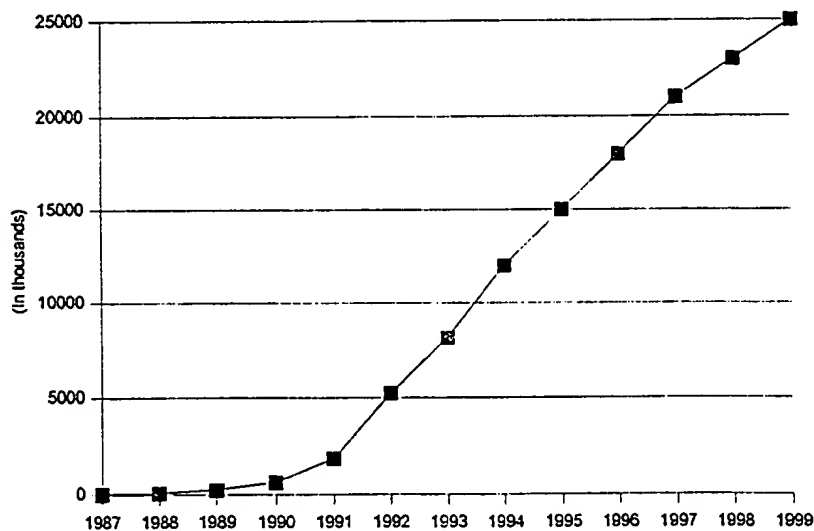
So what's ahead for the manufacturers, their sales reps, and the distributors of back belts? Let's take another look at the market, this time, projecting the next five years (1994 through 1999) in comparison to the initial seven years (1987 through 1993). Summary data are given in Table II below.

**Units.** Chart IV shows the projection of units (actual number of back belts) sold reaching 25 million in the year 1999 or about 3 times the 1993 level. Growth rates are expected to continue to decline from 25% per year to around 9% per year as this product line matures. Unit volume estimates are based upon the likely passage of an OSHA Ergonomics standard in 1995 (see more below), continued efforts to reduce the costs of compensation insurance and lost time, and back belt "technology" as it is generally known today. Also, more and more employers will indicate that back belts - as part of a broader program - are reducing their costs. (See Survey Section).

Graph IV

## Back Belt Market - Units

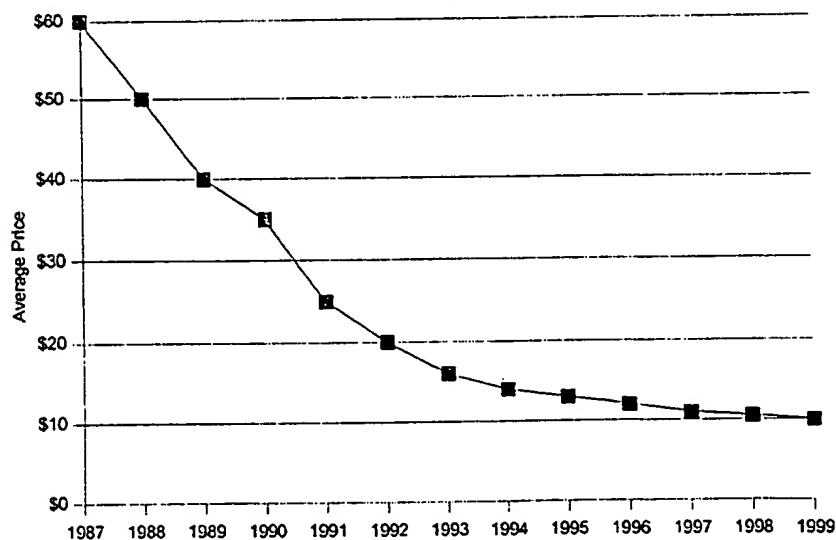
1987 - 1999



**Average prices.** Back belt prices are expected to continue to decrease through the forecast period, but at a slower rate as cost-cutting opportunities are used up. Decreases of 12%, 8%, and even 5% do not look like much in Chart V when compared to the reductions in the prior years. However, these future declines in average price will be forced by intensified competition from non-USA manufacturing sites (see Table III, below). Prices will decline because most of the end users see back belts as commodities with little or no differences in cost/benefit performance. Additionally, end users will continue to look for ways to reduce costs on MRO items such as back belts. (Future prices are expressed in current dollars.)

Graph V

**Average Price/Belt**  
1987 - 1999



**Market Size.** By 1999, the back belt market is expected to reach 25,000,000 units having an average distributor cost of \$10.00 for a total market value of \$250,000,000. Using an expected useful life of 6 months per belt (some users change belts monthly while other users get 12 months or more per belt), it is expected that about 9.0 million workers will be supplied back belts in 1999. One might think that the proven cost-savings from using belts would create a bigger market, but there are many situations where re-engineering will take out a lot of the problem(s). Further, many companies will still defer to the advice of their medical or ergonomic experts who do not want to see belts used for various reasons.

While 25 million back belts seem to be more than this country needs, nine million workers is still a relatively small portion of the total USA work force which includes a wide variety of occupations, many of which are just not suited to re-engineering and/or where the employer wants to try something that requires the use of belts plus training and active supervision. These jobs will vary from warehouse worker to hotel janitor to delivery person to bread baker and so on.

Graph VI

**Total Market**  
1987 - 1999

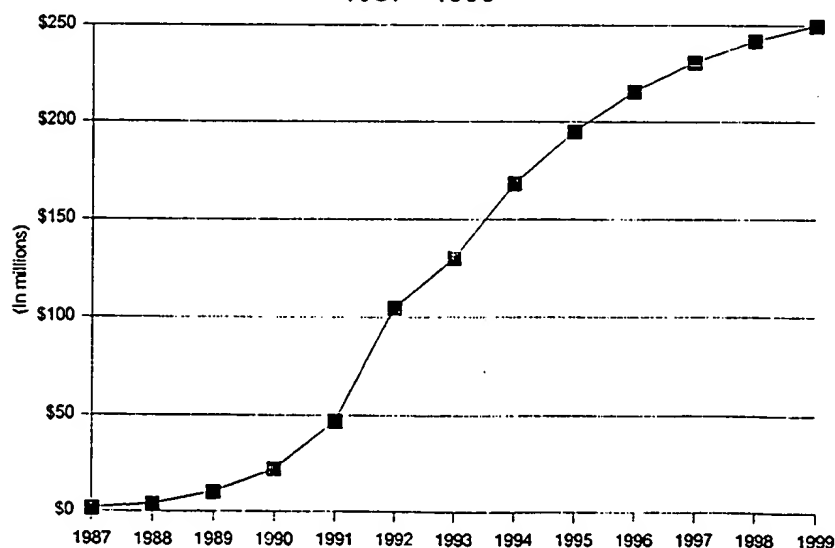


Table II below summarizes the historical data (1987-1993) and the forecasted data (1994-1999) into a 13-year picture. Looking at the unit results, one can see that 1987-1990 were the formative years, 1991-1998 the growth years, and by 1999 the maturity phase is clear. Average unit pricing confirms this pattern over the same years.

Table II Back Belt Market 1987-1999 Units, Average Price, and Market Size						
Year	Units (000)	% Change	Average Price	% Change	Market (Millions)	% Change
1987	25		\$60.00		\$1.5	
1988	75	200%	\$50.00	-17%	\$3.8	153%
1989	25	233%	\$40.00	-20%	\$10.0	163%
1990	630	152%	\$35.00	-12%	\$22.0	120%
1991	1,880	198%	\$25.00	-29%	\$47.0	114%
1992	5,250	179%	\$20.00	-20%	\$105.0	123%
1993	8,125	55%	\$16.00	-25%	\$130.0	24%
1994	12,000	48%	\$14.00	-12%	\$168.0	29%
1995	15,000	25%	\$13.00	-9%	\$195.0	16%
1996	18,000	20%	\$12.00	-8%	\$216.0	11%
1997	21,000	17%	\$11.00	-8%	\$231.0	7%
1998	23,000	10%	\$10.50	-5%	\$242.0	5%
1999	25,000	9%	\$10.00	-5%	\$250.0	3%

**Price cuts force foreign production.** While the origin of back belts can be traced to the early efforts of Ergodyne Corp., followed quickly by other American companies, the pressure to produce belts at lower costs has forced some of the production overseas. In the early cases, the foreign supplier is

replacing the original US contract manufacturer at a lower price; in other cases, the foreign supplier is coming into the marketplace in direct competition to other back belt producers. This competition from lower wage countries such as Taiwan, Korea, China, Philippines, and Central America will be a continuation of past cycles in areas of textile commodities. Mexico, in its new role within NAFTA, could be an important sourcing point for this product line, although the higher cost of raw materials within NAFTA might offset any labor, tariff, or freight advantages. The countries listed above have shown similar patterns of commercial activity as competitive pressures force suppliers to find lower costs, particularly labor-intensive operations such as this textile product.

Although wages and benefits are currently much lower in these countries, their rates of inflation are expected to be considerably higher than the USA, thus slowing their total impact on this market as shown in Table III below. Also, even though the general trend is liberalization of trade, allowing for more imports, there can be quotas in various categories of textiles, if needed. Imports are expected to grow from a 1993 share of 8% of all back belt units to approximately 50% in 1999.

Table III. Back Belt Market 1992 - 1999  
Estimates of Imported Product Market Share

Year	Domestic %	Imports %
1992	97	3
1993	92	8
1994	80	20
1995	70	30
1996	65	35
1997	60	40
1998	55	45
1999	50	50

Specialized back belts (e.g., special flame retardant materials for firemen, high visibility for municipal workers in roadways, etc.) will continue to be made in the USA mainly because of the relatively low volumes and specialized customers. Logo imprinting can be done either overseas in large volumes or at the importer's location.

**Importing Distributors.** Following the past patterns in similar industrial textile products, back belts manufactured in low-wage foreign countries will reach the USA market via two routes:

- ◆ Manufacturers who have moved the manufacturing (own or contract) from USA to overseas. Distributors and end users should see little or no change in products or service, but product pricing will be falling with the market or perhaps a little slower than the more aggressive importers. Product and packaging will require proper identification (e.g., "Made in ...").
- ◆ Importers who will resell to distributors. These importers are most likely already established in the import and resale of other industrial textiles and items like work and safety gloves. With unlimited capacity the factories will be aggressive in pushing for unit volume at the low end of the price range. The importing distributors will have everything to gain and should be expected to lead the price trends.

**OSHA and Ergonomics Standard.** The Clinton Administration has announced its intention of publishing an Ergonomics Standard in 1994 or 1995, with 1995 more likely. What can we expect of this new standard? What effect, if any, will it have on the back belt market - and on other items in the new PEP category?

Based upon private interviews with OSHA officials and their public statements to the same points, we should expect the new OSHA standard to

- ◆ Stress active assessment of ergonomic problems. OSHA will want to see the OSHA logs (records) for lost time. If there is an ergonomic element to the problem(s), then OSHA will look for some positive action by the employer.



- ◆ Direct employer action towards eliminating the problem forever by re-engineering the job. This could involve adding conveyors, robots, lifting tools, etc. and/or relocating the items to be lifted in a warehouse setting.
- ◆ Push employers towards a numerically based standard (i.e., revised NIOSH Lifting Standard) related to weights, distances, angles, and frequency. The goal to establish this standard will take a lot of effort and time. Like other controversial standards of the past, it is possible that employers will challenge the validity of this standard.
- ◆ Encourage employee training in proper body movements, including proper lifting techniques.

The Bottom line:

1. OSHA will be expecting employers to take positive, pro-active steps to reduce the incidence of "ergonomic" injury problems. A company that is doing "nothing" should expect a negative reaction from an OSHA inspection.
2. OSHA will struggle with the technical problems (effects of age, gender, physical condition, prior injury, etc.) related to very specific elements of the standard and thus be forced to rely more on the "general" concept: "where there's smoke there must be fire", (i.e., the required OSHA log of lost time due to "bad back", or "heavy lifting" will be enough proof that an ergonomics problem exists).
3. OSHA will not be getting a big budget increase for more inspectors to enforce this new standard (anyway, they don't have a lot of people now).
4. Employers will be reluctant to spend large sums to re-design, re-build, or otherwise re-work their manufacturing equipment while the OSHA Standard is going through its "shake out" stage. Some employers are expected to challenge OSHA on the new standard because it is "too vague, not specific enough" etc. A legal challenge to the Standard if it uses such items as the NIOSH Lifting Equation on the basis that Congress never intended to give OSHA the power to re-engineer the American workplace if the problem (back injuries) can be solved in other ways (such as training and ergonomic equipment).

5. OSHA will recognize that some occupations with high back injury rates (hotels, hospitals, construction, etc.) can not benefit from re-engineering. Lacking any solution of their own, it will be difficult for OSHA to prohibit employers from trying to solve the problem.
6. Most employers will try the least cost method to solve the problem, such as training and ergonomic equipment, and perhaps some re-arrangement of equipment to try to meet the spirit of the regulations and to get lower comp insurance and lost work time costs.

**What about back belts ?** Today, the OSHA experts in ergonomics are neutral to slightly negative about back belts for two reasons. First, as scientifically trained people (engineers) they want to see scientific evidence that back belts reduce injuries; to date, there is no such scientific evidence as the scientists define this term. Second, as ergonomists they want to see the "problems" engineered away - eliminated, solved - forever. Many of the same OSHA professionals seem to have a similar position about employee ergonomic training, although they are not so vocal about it.

So will OSHA ban the use of back belts as part of the new standard ?

No. OSHA will not recommend the use of back belts as part of the Ergonomics Standard nor will they not ban it either. With inconclusive "scientific" studies that are positive to back belts and other inconclusive "Scientific" studies that are negative, OSHA has nothing upon which to base any rulings. Further, since OSHA is so eager to reduce the incidence of back injuries, what has more impact than actual end user results? (See "Do Back Belts Work?" above.)

OSHA also has to anticipate opposition to elements of the Standard as it goes through the formal rulemaking process. Employers and trade groups will argue for as many options as possible in methods available to solve the problem. This is confirmed by answers to the final question of the end user Survey conducted in April. Question #6 asked: "Should back belts be an option for employers in the proposed Federal [and State] ergonomics standards?" a majority - 59% - answered "Yes", while only 33% said "No" (8% answered "Don't Care").

(Note: Many of the responses expressed opinions that back belts should be a viable option in addition to training as part of a broad program. (See Survey Section for verbatim comments from Survey respondents.)

**What do the customers want ?** The April 1994 Survey asked end users to rank the importance of several factors in the selection of back belts. The five factors listed for ranking were

Brand name of the product

Price (cost) of each unit

Where it is manufactured

Supplier from whom you buy

Other \_\_\_\_\_

Ranking was in five levels: Very Important, Important, Neutral, Not Important, Not Very Important. A score above 4.0 would indicate the item is Important or higher ranking. A score of 3.0 is neutral. A score below 2.0 indicates Not Important or lower ranking.

**Results.** Product price (cost to the buyer/employer) scored 4.1 or slightly higher than the Important mark, confirming the commodity status. Users viewed the actual product supplier (most often a distributor) as slightly less than neutral at 2.9, which indicates the importance of local availability of someone they prefer. Where the product is manufactured ranked third in process at 2.5, indicating an openness to imported products. Brand name came in last at 2.3 points confirming other data about brand names.

In the "Other" category, where the respondent could enter anything, the answers included such things as "quality, "durability", and "employee acceptance" [comfort]. Quality was listed far more times - 31 actual mentions - than any other write in comment. Of these 31 mentions, 30 companies considered quality Very Important and two-thirds of these 30 showed a preference for the well known brand names.

**Brands.** The survey asked the companies supplying belts what brand(s) they preferred. Responses could select from six very popular brands or they could write in a brand name. Using a weighted scoring method, the brand name game scores came out with a clear leader: ProFlex. Numerical scores were

ProFlex (Ergodyne Corp.)	18.5
OK-1	5.3
FLA Orthopedics	4.2
Decade (Chase Erg.)	3.7

It should also be pointed out that the choice "No brand preference" scored 33.0 points, or more than the 4 big brand names. This "gap" between brand names and "no names" is an opening for new suppliers so long as the product quality is acceptable to the end users. Since back belts are in the formative years of the product life cycle, the "no name" gap presents an opportunity to establish a brand name that can demonstrate savings to end users (proven case histories). (See Survey Section for additional information in this area.)

**Strategy options.** Back belts represent about 90% of the current sales of all PEP category items. While there are signs that the PEP category will expand into other items (wrist wraps, foot rests, etc.), back belts are expected to be the foundation - and the bulk of sales income - of the category through the '90's. The existing 40 to 50 current manufacturers of back belts have to look at the most likely future for this market and make some very important decisions.

Each manufacturer must answer the question:

"What is the best way to be profitable - and to survive - in a growing business with lower (absolute) profits per unit?"

There are just a couple of options open and they are not equally available to all of the producers:

**Build market share to be one of the market leaders**

**or**

**Find a niche and be the leader there**

**Building Market Share.** This option requires the financial strength and the management commitment to take lower profits now in favor of becoming one of the major back belt players later. (Just being there as a minor competitor in the future is not considered economically viable.)

The major actions needed to bring about this strategy are

- ◆ Aggressive pricing (reducing faster than average) to build market share

Goal: Be the least expensive for equal quality and performance

- ◆ Ever-expanding and extensive distribution in all channels

Goal: Be the easiest to obtain (location, shelf space, speed of service)

- ◆ Focused expense investments towards gaining new users, new distributors, new products and possibly services (assessment, training) closely related to back belts within the PEP category

Goal: Be the first supplier and hold these accounts (users and distributors)

We see one or possibly two companies holding market shares of 30% to 40% of the general line, standard products by 1998 or 1999, with annual sales of \$75 to \$100 million just in back belts. The current manufacturers who could execute this option, in our opinion, are Ergodyne Corp, OK-1 Manufacturing, and Chase Ergonomics. FLA Orthopedics will have to resolve its marketing directions and to catch up with these three before trying to grow rapidly. OccuMed International and Safeguard Technologies are probably too small to fund the required action steps by themselves; they might have a chance via a merger with another ergonomics products firm.

Importers (selling to distributors) are expected to hold from 10% to 20%, possibly 25% of this market by 1999, depending upon what the major shareholders do. If the major shareholders are reactive with price decreases and other share-gaining moves, then the importers have a much better chance at a bigger share. On the other hand, if one or two of the major shareholders makes the right

moves to gain market share, then there will be less space in the distribution system for the importers and they will end up with the low end of the estimate.

As this market matures, there will be a number of chances for consolidations (mergers and acquisitions) to gain enough volume to fight off competition. An interesting list of possible scenarios could be made, but it would just be an interesting list without substance. Unless there are some unique, defensible product or market positions involved in the possible deals, we think that the ease of market entry of imports precludes the normal volume benefits of consolidation. There may be some simple consolidation of smaller players as a means of surviving the crush of decreased prices but we think that most will cut their spending and slowly lose market share as it becomes unprofitable to stay in the marketplace.

**\* Find A Niche - And Fill It.** Within the broad total market for back belts there are [will be] certain niches or special areas that will permit reasonable profits per unit, although the total unit volumes will be small. Examples: Back belts that are made with special flame-retardant materials for fire fighters produced and sold in rather small quantities at a time. Or the direct supply of a particular product to a major end user located nearby to have the lowest possible prices while giving great service.

The major action steps needed to bring about this strategy are

- ◆ Identify the niche - or maybe a couple of them

Goal: Be more knowledgeable about these customers than the competitors

- ◆ Concentrate product development and sales efforts in the niche(s)

Goal: Be focused and disciplined, developing what the niche needs

- ◆ Excel in customer service, product quality, and customer relations

Goal: Be so good that the customers will not be interested in other suppliers

There are a number of companies who can pull off the niche option. We think only a few of the candidates will really take this step. Most manufacturers will continue their present programs as long as they can be price competitive, making cuts in sales costs (commission rates), marketing (advertising and trade shows) while they lose market share to the companies who are out to get it. In just a few years, the companies that did not choose to execute a clear strategy will look at their back belt sales and profits and realize it has withered away.

**Distributor options.** The wide spread use of back belts will create opportunities for distributors whether they are industrial safety, medical, or alternate channel specialists.

The major opportunity itself is the supply of PEP category items - something that will fit right into the existing systems (sales, warehousing, purchasing, service, etc.) To be able to capitalize on this opportunity distribution management should

- ◆ Get established (direct access) with the back belt manufacturers who have the best chance to be the market leaders in standard products.
- ◆ Work with a reputable importer whose products and prices cover the low end of the product line where the price issue is significant.
- ◆ Use multiple product alternatives (high, middle, low) to present customers with alternatives (rather than fight it out on price with just one product option).
- ◆ Emphasize back belts and other PEP category items in catalogs, flyers, sales contests, customer seminars, etc.
- ◆ Set growth goals - and track results - so that future PEP sales and profits will be an important factor in your business.
- ◆ Evaluate related PEP items as they fit your customer base and style of operations (see below).

An important secondary option for distributors is the area of training materials (video tapes, posters, handbooks, etc.) . End users will need these tools in greater quantities and more often than ever before. To keep their ergonomics program working, end users will need a wide variety of fresh materials to use in weekly and monthly sessions. While those costs might not have been accepted in the past, companies are beginning to recognize the big payback of training in these areas.

For some distributors supplying training materials is just not a viable possibility. But for others, this area could be a real winner. To pursue this, we recommend

- ◆ Talk with your key accounts to see what they want in training aids
- ◆ Figure out what this opportunity might be worth and what it might cost, then decide to get into this or to leave it alone.
- ◆ Start with the product manufacturers whose lines you carry, using their training aids (if they have them). Then add the training items that they do not have by contacting the training industry specialists (video, posters, booklets, etc.)
- ◆ Look at new ideas like a rental library of video tapes or running sessions to "Train the Trainer" with help from your product manufacturer(s).



# FOR DISTRIBUTORS ONLY

AN INFORMATION SERVICE TO SAFETY EQUIPMENT DISTRIBUTORS

SAFETY & HYGIENE NEWS

MAY 1993

Special report:

## Taking stock of the back support business

Maybe someday they will write a case study of the industrial back support market at the Harvard Business School. It has many classic elements—product pioneers, exploding demand and sales, knock-off imitators, price wars, government intrusion, falling profits, the search for new market strategies.

Safety distributors have been right in the middle of this story. The roller coaster ride has left many confused. The market has quickly matured: what opportunities remain? In this report, *For Distributors Only* talks with vendors and distributors about the current shape of the market and where it's heading.

### Matter of opinion

As for the current state of back support sales, it depends on who you ask:

• A manufacturers' rep in the midwest says, "It's purely a price war. I got an order over a \$10 belt because I came in at \$9.50. There's still growth opportunities, but we actually do better with our knee pads."

• "Our sales are



Photo courtesy of Ergodyne

off 20 percent. Anybody who says their business didn't decline last year is lying," says a sales exec for a back support supplier.

• "The biggest change is in the number of suppliers and lower prices," says a Michigan safety distributor. "The market is still pretty good."

• "Our sales haven't slipped," says Bill Baker of Safety Supplies & Services in Birmingham, Ala. "I don't think the bloom is off the rose. We plan on selling a lot (of back supports) in the balance of this year and next year."

• "Our (sales) guys are probably talking about (back supports) less. We've sold a lot of them and continue to sell them, but not like in '93. I don't think our guys were ever sure that they worked," says another distributor.

• "Our sales have flattened," says Tom Votel, president of Ergodyne. "The back support market is maturing, but the entire ergonomics product category is in its infancy. That's how I encourage distributors to look at this."

With differing opinions and experiences like these, no wonder the back support business perplexes many safety distributors. Interviews with more than a dozen sources did turn up some areas of agreement: For many in the business, the market peaked in 1992 or 1993, before a flood of 40-50 competitors sent prices tumbling and put a squeeze on margins.

Last year, safety market consultant AJ McNamara projected total back support sales of \$130 million in 1993 (8,125 million units at an average price of \$16).

This was a huge jump from \$10 million in sales in 1989 (25,000 units at \$40 average).

McNamara had projected big growth in 1994—12 million units at a \$14 average for a \$168 million market. He is now updating his original estimates for '94 and '95, which will show that unit sales have flattened or even dropped (partly due to the NIOSH report described below) while prices have declined faster than expected (due to the flood of competitors).

There's also agreement among many in the business that many back support buyers have become indiscriminate shoppers. "All back supports are unfortunately considered equal," says Tom Sebastian, general manager of Safeguard Technologies. One reason is a lack of research showing that higher priced supports perform better.



Photo courtesy of Valco

While some vendors continue to report success with high end products, the general sentiment is that back supports have become commodities. Many products on the market look the same, and feature similar construction. There are no standards covering their design performance.

But looks can be deceiving. Pam Compton of Bollinger Healthcare fears that shoddy low end products are damaging the reputation of the whole product category. What's someone going to think when they buy a cheap belt and it falls apart 30 days, she asks.

### Current practices

So how are safety distributors reacting to the change in market fortunes? Some aren't giving back supports the sales push, turning their attention instead to OSHA-driven products such as fall protection equipment. Others rely more on catalogs to sell back supports, while the volume is small but there's less hassle over price. Then there are distributors who have changed their sales strategy and continue to succeed with back supports.

That's the story at Safety Supplies Services in Birmingham. Here, ironically, the sales approach that has evolved the opposite of what has occurred in the general market. The company used to sell back supports simply as a product commodity, says Bill Baker. Now salespeople have been trained to sell a program, not a product.

"In the early days customers used to rely on belts alone. Now I see more and more training and exercise with belts," he says. One large customer at Safety Supplies & Services conducted a multi-day training seminar before employees started using back supports. Employees were schooled in how to use them properly, when to use supports, and how to wear and maintain them.

"We don't want to be looked at as authorities," says Baker. "We want

Continued on page 9

## What hath NIOSH wrought?

It's been almost one year since NIOSH issued its report stating there is no scientific evidence that back supports prevent back injuries. What has been the impact on product sales?

Here are some views:

• "Our business was certainly affected by NIOSH confusing the issue," says Ergodyne President Tom Votel. He says NIOSH's "opinion and conjecture" was based not on science but a belief that employers use back supports as a quick fix for ergonomic problems. "Our experience of 13 years debunks every NIOSH concern," he says.

• "NIOSH scared the hell out of people," says Safeguard Technologies' Tom Sebastian. "We got calls from all over the country. Many customers were afraid they'd hurt people by putting belts on them."

• "Even fire distributors heard of the NIOSH study," says a manufacturers' rep. "I had distributors tell me they didn't want belts because NIOSH said they didn't work."

• "I don't think the NIOSH report had that big of an effect," says Pam Compton of Bollinger Healthcare. "It's just one more thing to overcome. We've been taking heat from doctors for years. The market has been impacted

almost by an 89¢ belt you buy at a home center or sporting goods store."

• "NIOSH really harmed business," says Laura Tenen, executive vice president of GenNoma International, Inc. "Distributors must know how to respond to their report." She says it's important to know how the report was compiled, and to be able to point to field studies showing the effectiveness of back supports.

• "NIOSH had quite a bit of an impact," says Kirby Hibbard, sales manager for OK-1 Mfg. Co. "Maybe it was good for thinning out the competition a bit."

## Back support sales...

make customers aware of cost savings, proper lifting techniques, and where to use and not use belts."

Safety Supplies & Services sales reps attend ergonomics seminars, conferences, and local professional society meetings to bolster their understanding of the issues. They've also benefited from consultant visits to Safety Supplies & Services.

"There's a lot of education available to those who want it," says Baker.

## Looking ahead

What's the future hold for the back support business? If back supports have matured to the point where they're considered safety commodities, then their outlook would be similar to other PPE items. This means flat to slightly increasing sales, depending on the overall health of the economy and number of workers on payrolls, continued price pressure coming from imports, and the consolidation of vendors. Pam Compton, for one, thinks there will only be a half dozen or so suppliers in a few years.

"The fringe players didn't spend much to get in (to the market)...., so why would they leave?"

But as with many aspects of the back support business, there are differing opinions about its future. An exec with one supplier estimates the market will shrink eight to nine percent each year in the next few years. AJ McNamara doesn't see a big shakeout coming with suppliers. "The fringe players didn't spend much to get in (to the market). They are making some money without much expense, so why would they leave?" he asks.

There is more agreement on what distributors should do to get the most from the business that's there. Here are several suggestions:

• Sell programs, not products. This is the Safety Supplies & Services strategy. Emphasize training. Says Safeguard Technologies' Sebastian: "Training and back supports produce better results than using back supports alone. Training is the common thread that makes any program successful. Good distributors are involved in training."

**Adds Cindy Roth of Ergonomics Technologies Corporation, a consulting firm: "You can provide any ergonomics product, but if people don't understand its use and function, forget it; you**

might as well not even give it to them. It won't be effective. Training and awareness are very important."

• Don't wait for an OSHA ergonomics standard to drive sales. For one thing, a current draft of the standard has the agency taking a neutral to negative position on the use of back supports. The draft's only mention of back supports comes in its definition of personal protective equipment, where back and wrist supports are specifically excluded from the types of PPE that can be used to help workers in problem jobs.

Plus, most observers predict it will be years before a standard is finally issued, if one ever comes out.

- Laura Tencer, executive vice president

of OccuNomix, suggests having customers run a small test program using back supports and training "to open the door."

The motive is cost savings. An average lost workday case costs \$24,000, according to reports. Sales reps should be armed with studies showing how training and back support programs have reduced back problems and workers' compensation costs for a number of employers.

• Distributors should carry three or four suppliers to offer a spread of domestic prices (high, middle and low) plus perhaps an imported support for the very lowest prices if customers will accept the low quality, says consultant McNamara.

With a growing emphasis on training,

sources say it's important for distributors to choose vendors who can provide training and education materials.

- Look beyond back support: Ergodyne's Votel says his company is experiencing triple-digit sales growth for office ergonomics products such as anti-glare VDT screens and lumbar rolls, and double-digit growth for other personal protective ergonomic products such as wrist supports and anti-vibration gloves.



He says distributors should take a holistic approach to the ergonomics business, looking at products for both blue and white collar workers. "The opportunity now is beyond back supports; distributors shouldn't miss out on the bigger picture," he says.



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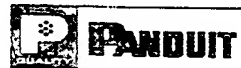
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**S**afety managers Stewart Burkhammer and Lee DeYoung appear to have a lot in common. They both work for large companies, have comprehensive, successful safety programs, and believe in the value of employee involvement and management commitment for safety success. Ask them what they think about back belts, however, and they sound like they are from different worlds.

Says Burkhammer of construction giant Bechtel Corp.: "Back injuries are our biggest safety concern. We are three years into a major prevention program that includes mandatory back belt use. We had no biases going in. Our only hope was that the entire program [which also includes training and pre-shift stretching exercises] would work, and it has." Bechtel projects with the back program have 12 percent fewer back injury claims than those that do not, and claims costs have been reduced by one-third, Burkhammer said.

Says DeYoung of the 4,000-employee Mitsubishi Motor Manufacturing of America plant in Normal, Ill.: "We do not allow anyone to wear back belts. I've open-mindedly reviewed the literature and talked to vendors, and no one has given me a compelling reason for back belts. We believe in reducing the stressors at the source."

Such is the dichotomy in American industry. Many people either love back supports or hate them. There are well-intentioned employers, researchers, health professionals and other experts on both sides, as well as a number of people perched on the fence.

"I see two sides to this argument," said Joseph L. Selan, senior vice president with Dallas-based Advanced Ergonomics. "No biomechanical benefit has been consistently identified, but there are a lot of people who believe they work in the real world."

Selan said both views are valid, provided everyone is open-minded to new research and experiences over the next few years. Early indications, several sources said, are that much of the new research, case studies and attitudes will boost the credibility of back belts, which 18 months ago were regarded by many as an ergonomic pariah.

### Responding to a Problem

The back belt boom of the early 1990s was an attempt to control a le-

gitimate, serious problem in American industry. Back injuries, especially to the lower back due to repetitive lifting, bending and twisting, have long been a safety and health nemesis, and their costs have continued to rise.

Over the years, U.S. employers have used training, two-person lifts and mechanical devices to try to attack the problem. In the late 1980s, motivated by frustration and smart marketing by manufacturers, many employers turned to back supports for help. They bought 25,000 such devices in 1987, according to A.J. McNamara of John Alden Associates, Holden, Mass. The U.S. market exploded thereafter and reached more than 8 million units by 1993, according to a

1994 market analysis by McNamara.

McNamara's research predicted that U.S. employers would buy 12 million back belts in 1994, 15 million in 1995 and 25 million in 1999. He estimates now that they actually bought 6 million in 1994 and 4 million in 1995.

Market changes fueled some of the decline, but back belts have had bigger problems over the last two years. In May 1994, a NIOSH working group said it was "unproven" that back belts lessen the risk of back injuries among healthy workers. It said it could not recommend their use and did not consider them personal protective equipment. Basing its conclusions on existing research, the group also warned against

## Blind About Back Belts?

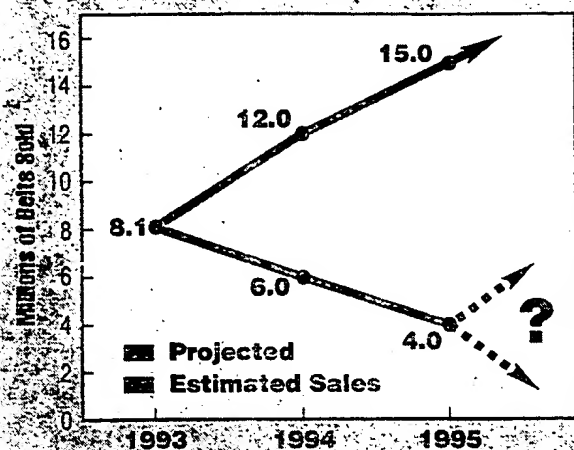
Many safety pros have made up their minds about back supports, but new research and changing attitudes may force them to take a second look.

by Gregg LaBar

John Beukemann

## Changing Fortunes in the Back Belt Market

Between 1989 and 1993, the U.S. back belt market grew from 250,000 units sold to 8.1 million. Since then, market changes and negative publicity have turned sales results upside down. It remains to be seen whether they can recover.



Leesport, Pa., belt manufacturer Safeguard Technologies. "We acknowledge the science is not 100 percent, but discouraging people from using something that works for them is wrong."

## Changing Views

Although some proponents and opponents of back supports have entrenched views, many people say they are willing to change with the times. Some might be in for a shock, however, because early indications are that back belts may regain some credibility.

One of the first indications of a possible back belt comeback was a University of Cincinnati research paper in the May 1995 issue of *Ergonomics*. Researchers Ash M. Genaidy, Rodney J. Simmons and Doran M. Christenson evaluated the same studies as the NIOSH work group, as well as others, but reached different conclusions. They said that "back supports designed for specific purposes could be biomechanically, physiologically and psychophysically effective" in reducing loads on the lumbar spine for industrial workers.

Last fall, the National Safety Council released a technical advisory report on back supports that mirrored NIOSH's reservations. The report, developed within NSC's committee structure, went further, however, in suggesting that back supports may have some value as a

"supplement" to a comprehensive ergonomics program. It also offered advice on integrating employee training, fitness and back belt programs.

"Early drafts of the report were very strong in opposing belts," committee member Marilyn Joyce, director of the Seattle-based Joyce Institute, told *Occupational Hazards*. "We also faced a lot of pressure to endorse them. This is a compromise document." She reported being "fairly comfortable with the outcome" despite "actively discouraging" the use of back supports in her consulting work.

At press time, several prominent researchers were preparing to publish positive studies in peer-reviewed journals. Although he would not reveal specific findings, Ohio State University's Bill Marras reportedly has found positive effects from wearing back supports during work-type lifting exercises.

In a laboratory study at Rush-Presbyterian-St. Luke's Medical Center in Chicago, Steven A. Lavender found that back belts reduced twisting while lifting among nurses. Preliminary results from another study lead Lavender to believe that the hazards of unexpectedly loading the torso may be reduced through back belt use.

"We're starting to see some trends in the positive direction," said Lavender, an independent researcher not known as a fan of back belts. "For too long, this issue has been market-driven, instead of science-driven. The science has to catch up."

At the 1995 NSC Congress & Exposition, UCLA Professor Jess Kraus said he was completing a five-year epidemiological study of 77 Home Depot stores and 10,000 employees. Although Kraus declined to hint at his findings before publishing them this year, Home Depot Corporate Safety Director Steve Taylor said the company as a whole has seen "positive results" from a back belt program that began in 1990. Home Depot's injury frequency rate declined from 4.8 per 100 full-time workers in 1989 to 2.0 per 100 in 1995, Taylor said at the NSC.

If Kraus' findings corroborate Taylor's experience, the Home Depot study would become the latest positive case study, following on the heels of Bechtel, warehouse and food distributor Fleming Cos. and hundreds of lesser known success stories.

## War of Words

To spread the word that not all of the news about back belts is bad, seven manufacturers formed the Practical Er-

possible harmful effects.

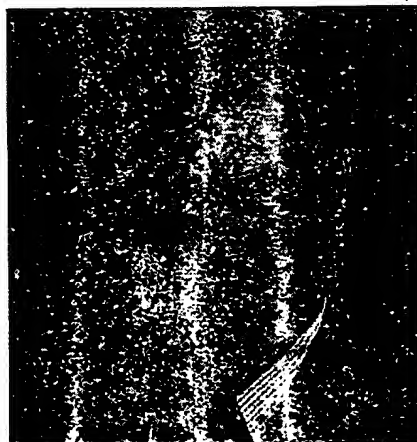
In drafting an ergonomics standard, OSHA was prepared to take a similar stand. Many ergonomics consultants and researchers and several professional associations chimed in with reservations about the devices' ability to reduce forces on the spine or improve posture.

In May 1995, the state OSHA program in Minnesota, in the backyard of leading back support manufacturer Ergodyne Corp. of St. Paul, issued probably the strongest rebuke. A one-page statement said MNOSHA "discourages the use of back belts by healthy, previously uninjured workers." It warned that more than a dozen medical conditions, ranging from hypertension to breathing problems, could be exacerbated by back belt use.

"We can't cite people for issuing back supports," Roy Miner, MNOSHA senior safety investigator, told *Occupational Hazards*. "If we see back belts on during an inspection, we have a long talk with the safety director to strongly discourage their use. Then we try to help him find an engineering solution."

Later in the year, back belts came under fire in a class-action lawsuit in Louisiana against more than 30 manufacturers. Some 50 individuals claim they were injured while wearing back supports. Manufacturers disagree with the plaintiffs' claims in the case, which is still in the early stages.

Back supports have gotten "a bum rap" from NIOSH, OSHA and ergonomists, asserts Tom Sebastian, vice president of sales and marketing for



**Bechtel's Burkhammer:** "We had no biases going in. Our only hope was that the entire program (including back supports) would work, and it has."



gonomics Coalition. With OSHA unlikely to move on an ergonomics standard, the Coalition's main government relations target is NIOSH, and the result has been a war of words.

Coalition advertisements claim NIOSH left one key element out of its 1994 report — "the truth." Manufacturers charge that NIOSH was unnecessarily negative and ignored anecdotal evidence about successful injury prevention efforts that included back supports.

"NIOSH described the glass as more than half-empty when it should have described it as at least half-full," said Gary Shumate, president of back support manufacturer and coalition member Chase Ergonomics, Albuquerque, N.M.

At the NSC session, Kent Wilson, Ergodyne's technical training manager, said OSHA and NIOSH officials and some consultants appear to be ideologically opposed to back supports because they prefer engineering controls. He said respirators and hearing protection faced similar struggles before being accepted as personal protective equipment (PPE). He said the agencies should treat back belts as PPE and encourage or require training on their proper use.

NIOSH officials have not taken the criticism lightly. NIOSH Director Linda Rosenstock said the Practical Ergonomics Coalition is "running a smear campaign." "At best or at worst, we have a difference of scientific opinion [with the manufacturers]," she said in a speech last November to the Industrial Safety Equipment Association. "Bashing an agency — telling a mistruth — is not a good way to get good dialogue."

NIOSH's ergonomics experts insist their report does not make them biased against back supports. "All we have said so far is that any benefit is unproven," Larry Fine, director of NIOSH's Division of Surveillance, Hazard Evaluation and Field Studies, told an NSC audience. "Did we lie? No, we did not."

Fine said three major studies published after the NIOSH report and before the NSC meeting found no significant increases in strength, lifting capacity or endurance as a result of back belt use.

In an unusually positive statement about back supports, Fine added that "voluntary use is certainly acceptable."

Manufacturers say this indicates that back belt skeptics are tempering their views. Skeptics deny this and say it is the manufacturers who have changed their



**Rosenstock: Back belt coalition trying to "smear" NIOSH's reputation.**

story to say that back belts are only part of an effective prevention program.

## Looking for Answers

In light of the tension between NIOSH and belt manufacturers, it is ironic that NIOSH researchers may hold the key to the devices' long-term viability.

"We won't be afraid to report that back belts are beneficial if that's what we find," NIOSH's Lytt Gardner told *Occupational Hazards*. "We believe that if there is an effect, it's fairly modest. But, if it's real, that's important because of the size of the problem."

Gardner is involved in a two-year study of some 8,000 employees working in 160 new Wal-Mart stores. Half of the stores will mandate back belts and half will not use them. Employees at existing Wal-Mart facilities use back supports and are not part of the study, which is expected to begin in May.

NIOSH safety researcher Hongwei Hsiao is studying 137 back supports for their ability to reduce spinal loading, twisting and bending. Results are expected by mid-1997.

"First, do no harm" — a medical credo — is one of the first issues that researchers have to address. If belts pass that test, they will be scrutinized for a positive impact on back injury incidence rates. Even if such a relationship is identified, a third, monumental question looms: How do they do this?

Researchers will test for two categories of benefits: physiological/ biomechanical and psychophysical.

Physiological/biomechanical benefits

would be indicated if research reveals that cinched back supports increase intraabdominal pressure, and therefore, reduce spinal loading and prevent bending and twisting at the torso.

Psychophysical benefit theories include back belts reminding employees to lift with a straight back; decreasing the perception of pain; and making employees feel better about their work and their employer.

If back belts are to have long-term credibility, supporters and skeptics agree, research will probably have to reveal physiological/biomechanical and psychophysical benefits. Otherwise, one NIOSH official argued, they may be no more effective than "tying a string around someone's finger" to remind him what he learned in a training program.

Most manufacturers trust researchers at NIOSH and elsewhere to follow through with quality research, and they expect various benefits to be identified. "The physiological benefits will be tougher to prove," said Charles Caswell, director of sales and marketing for OK-1 Manufacturing Co., Altus, Okla.

The uncertainty surrounding back supports puts many safety and health practitioners in a difficult position. On the one hand, they have access to a relatively low-cost possible remedy to one of their greatest challenges. On the other hand, if back supports cause harm or have virtually no positive impact, any money spent on them may be a waste.

Until more research is available, experts said, companies should do what works for them (and reevaluate what doesn't). Eventually, they may need to change their minds and their programs. Even some skeptics say they would welcome a greater role for back supports, if the research points in that direction.

"I really wish these things worked as well as some of the purveyors claim," OSHA's Roger Stephens said. "I would love to have a magic bullet. They haven't proven to be that. I still hope they have some utility that can be proven later on — anything to help reduce the incidence of back injuries."

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